

IS417T

Capstone Project

[Onsite]

Course Description:

The Capstone Project involves a demonstration of the information studied in the core program courses. The assigned project contains a typical scenario involving setting up and securing both intranet and Internet/e-commerce systems for an organization. Students may choose an individual or team project to develop and implement an enterprise wide IS Security Policy and Plan. Students will also audit the project of another student or team.

Prerequisite(s) and/or Corequisite(s):

Prerequisites: Completion of a minimum of 164 credits earned in the program of study including IS415T System Forensics Investigation and Response or equivalent and IS416T Securing Windows Platforms and Applications or equivalent

Credit hours: 4

Contact hours: 60 (36 Theory Hours, 24 Lab Hours)

SYLLABUS: Capstone Project

Instructor: _____

Office hours: _____

Class hours: _____

MAJOR INSTRUCTIONAL AREAS

1. The Capstone project deals with planning, designing, and building an Information Security system to address an organization's Information Security problem as requested by the customer or, in the absence of such a request, to respond to a preset ITT Tech custom-developed Request for Proposal (RFP).
2. The project will require you to use the knowledge and skills learned during the ISS program, such as security technology, computer forensics, Information Security policies, economics, statistics, budgeting, and auditing, as well as professional writing and presentation skills.
3. The project is student-directed and will require extensive use of Virtual Library resources. It may be assigned to teams or individuals if they wish to work individually. The faculty advisor assigned to teach the course will guide you. Based on each situation in a school, you will be directed to respond to the RFP and will find customers or will be provided with one by the faculty or the Director of Career Services (DOCS) department. If you in agreement with the faculty decide to pursue a project with a third-party then a document that contains a disclaimer to the effect that the school and you are free on any liability must be signed by the outside entity representative, you and the faculty.
4. You will participate in activities that encompass the system development life cycle. You will identify the problems and the vulnerabilities of the current system, conduct the needs analysis, plan the project, determine methodologies for addressing the task, develop solutions, and present their findings.

5. You will plan, design, and implement an Information Security System for an enterprise that includes all ten domains of the Information Security Management practices and meets the National Security Agency Awareness Level and Performance Level objectives.
6. You will interview clients and system users, conduct market research, and use client feedback to create a requirements document. You will then design an Information Security System that meets performance, schedule, and budget requirements and adjusts for unplanned occurrences.
7. You will prepare reports documenting the aspects of the project and present these regularly to receive faculty approval and feedback.
8. You will give a formal presentation of the Capstone project to the customer, faculty, advisory committee members, and staff. You will conduct the presentation in a real-world setting with a formal dress code and include role-play – for on-site – or submit a detailed presentation – for online.

COURSE OBJECTIVES

After successful completion of this course, you will have the opportunity to:

1. Assess the Information Security needs of an organization and analyze an RFP (National Security Agency (NSA) G.a).
2. Determine the methodologies to secure the Information Security System of the organization (NSA F) and provide effective technological solutions to Information Security problems. (*Domain 3 Security Management Practices*).
3. Perform user needs assessment by interviewing system users and conducting market research (NSA E) and perform project planning and use client feedback to create a requirements document (NSA C).
4. Describe the process of an Information Security project development life cycle (NSA F.c).
5. Create project scheduling and budget requirements and develop solutions for unplanned occurrences (NSA F.a and E).

6. Design an Information Security system for an enterprise using the hardware, software, technology, services, implementation, and management details (NSA F) (*Domain 2 Telecommunications, Network, and Internet Security*) and create a proposal for an enterprise Information Security system.
7. Make provisions for backups and contingency planning/disaster recovery procedures (NSA F.d) (*Domain 8 Business Continuity Planning and Disaster Recovery Planning*).
8. Given an organization, document solutions to issues related to security policies, roles of organizational personnel from the Information Security standpoint, and telecommunications security policies.
9. Present the proposal professionally in spoken and/or written format.
10. Demonstrate efficient and effective use of ITT Tech Virtual Library.

Related SCANS Objectives

1. Acquire and evaluate information.
2. Understand how technological systems work.
3. Specify goals and constraints, generate alternatives, consider risks, and evaluate and choose the best alternative.
4. Demonstrate competence in the selection of technology, and determine desired outcomes and applicable constraints.
5. Demonstrate competence in the application of technology to task.
6. Recognize problems. Utilize the systematic problem-solving method, analyze the problem, establish criteria for the solution, analyze the ideas for solution, select or create a solution, and defend your choice.
7. Recognize time constraints and determine ways to maximize efficiency.
8. Communicate thoughts, ideas, information, and messages.
9. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
10. Participate as the member of a team and exercise leadership.

TEACHING STRATEGIES

The curriculum is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and that foster higher cognitive skills. Delivery makes use of various media and delivery tools in the classroom.

COURSE RESOURCES

Student Textbook Package

A specific textbook is not specified for this course. However, textbooks for the ISS courses (such as IS311 - Internetworking Infrastructure and Operations, IS312 - Information Security Essentials, IS314 - Security Architecture of Common IT Platforms, IS315 - IS Risk Management & Intrusion Detection, IS316 - Fundamentals of Network Security, Firewalls and VPNs, IS317 - Hacker Techniques and Incident Handling, IS318 -Information Security Perspective on Intranet, Internet and Ecommerce Infrastructure, IS411 - Security Policies & Implementation Issues, IS413 Auditing ECommerce Systems and IT Infrastructure, IS414 - User Authentication Systems and Role Based Security, IS415 - System Forensics, IS416 - Securing Windows Platforms and Applications, IS418 - Securing Linux Platforms and Applications, IS421 - Legal & Security Issues, EG371 - Research Methods, EG372 - Written Analysis and EG381 - Statistics) would be used as references for this course.

References and Resources

ITT Tech Virtual Library

Login to the ITT Tech Virtual Library (<http://www.library.itt-tech.edu/>) to access online books, journals, and other reference resources selected to support ITT Tech curricula.

■ General References

None

- Books

The following books are related to this course and are available through the ITT Tech virtual Library

- **Books 24x7:**

- Brenton, Chris and Cameron Hunt .*Active Defense: A Comprehensive Guide to Network Security*. Sybex, 2001.
- Nichols, Randall.K, Daniel J. Ryan , and Julie J.C.H. Ryan .*Defending Your Digital Assets Against Hackers, Crackers, Spies & Thieves*. McGraw-Hill, 2000.
- Mallery, John. *Hardening Network Security*. McGraw-Hill/Osborne, 2005.
- Endorf, Carl, Eugene Schultz and Jim Mellander. *Intrusion Detection & Prevention*, Osborne: McGraw-Hill, 2004.
- Sisco, Mike. *Practical IT Policies and Procedures*. MDE Enterprises, Inc., 2004.
- Choudhury, Suranjan, Kartik Bhatnagar, Wasim Haque, and NIIT.*Public Key Infrastructure Implementation and Design*. John Wiley & Sons, 2002.

- **E-Brary**

- Eloff, Jan H. P. (Editor) .*Advances in Information Security Management & Small Systems Security*.
- Peltier, Thomas R. *Information Security Risk Analysis*.
- Calder, Alan. *IT Governance: A Manager's Guide to Data Security and BS 7799/ISO 17799*.
- Sridhar, Veradharajan .*Managing Information Security on a Shoestring Budget*.

- **InfoSECURITYNetBase**

- Fisch, Eric A and Gregory B White. *Secure Computers and Networks: Analysis, Design, and Implementation*.
- Kairab, Sudhanshu. *A Practical Guide to Security Assessments*.

- Tipton, Harold F. and Micki Krause. Information Security Management Handbook, Fifth Edition.
- Peltier, Thomas R. Information Security Policies and Procedures: A Practitioner's Reference, Second Edition.
- Davis, Peter T. Securing and Controlling Cisco Routers.

- Periodicals

Periodicals>EbscoHost

- Network Computing at <http://www.networkcomputing.com/>
- IT Architect at <http://www.itarchitect.com/>
- Information Week
http://www.informationweek.com/index.jhtml?_loopback=1
- Information Security Magazine at
<http://informationsecurity.techtarget.com/>

- Other Resources

- **Reference Resources:**

- National Vulnerability Database:
NVD is a comprehensive cyber security vulnerability database that integrates all publicly available U.S. Government vulnerability resources and provides references to industry resources.
<http://nvd.nist.gov/>

- Microsoft Project:
A tour, list of features, and FAQs about Microsoft Project at <http://office.microsoft.com/home/office.aspx?assetid=FX01085795>
 - TenStep Project Management Process at <http://www.tenstep.com/>
 - CISSP Certification at <http://www.cissps.com/>
 - Center for Intellectual Property and Copyright in the Digital Environment: This site from the University of Maryland University College offers the Virtual Academic Integrity Lab and a copyright tutorial as well as news and research.
- **Other**
 - Books:

Gregg, Michael and David Kim, 2005. *Inside Network Security Assessment: Guarding Your Infrastructure*. Indianapolis: Sams.
 - Websites:
 - www.isc2.org (ISC)2 Institute: 10 Domains of the CBK (Common Body of Knowledge) of the Information Security Web site NSA
 - <http://www.humanfirewall.org/smi/> a Security Management Index survey developed according to ISO 17799 international security standards to reflect best practices from a global perspective. Used to measure the current security management practices of an organization compared to other organizations in the industry and peer group.
 - <http://lasecwww.epfl.ch/~oechslin/projects/ophcrack/> for **Ophcrack** (password-cracking tool)
 - <http://thc.org/thc-amap/> for **TCH-Amap** (network scanning tool)
 - www.antsight.com/zsl/rainbowcrack for **Rainbowcrack** (hash-cracking tool)
 - www.foundstone.com/resources/freetools.htm for **SuperScan** (Windows scanning tool for TCP and UDP) and other Intrusion Detection Tools like IPv4Trace, Carbonite™, FileWatch™, Attacker™ and Fport™
 - www.insecure.org for **Nmap** (Windows and Linux scanning tool)
 - www.lurhq.com/scanranddissected.pdf for **Scanrand** (network information gathering tool).

- www.metasploit.com for **Metasploit** (exploit and vulnerability assessment tool)
- www.nessus.org for **Nessus** (open source scanning tool)
- www.netstumbler.org for **NetStumbler** (wireless networks scanning tool)
- www.networkchemistry.com/products/packetyzer for **Packetyzer** (free packet analysis tool)
- www.openwall.com/john for **John the Ripper** (UNIX, Linux and Windows password-cracking tool)
- www.oxid.it for **Cain and Abel** (a Windows password cracking enumeration tool)
- www.snort.org for **SNORT** (Intrusion Detection System tool available for Windows and Linux)
- www.somarssoft.com for **DumpSec** (a Windows GUI tool that provides account information, RID information, open shares)

All links to web references outside of the virtual library are always subject to change without prior notice.

EVALUATION & GRADING

COURSE REQUIREMENTS

1. Attendance and Participation

Regular attendance and participation are essential for satisfactory progress in this course.

2. Completed Assignments

Each student is responsible for completing all assignments on time.

3. Team Participation (if applicable)

Each student is responsible for participating in team assignments and for completing the delegated task. Each team member must honestly evaluate the contributions by all members of their respective teams.

Evaluation Criteria Table

The final grade will be based on the following weighted categories:

CATEGORY	WEIGHTS
Participation	20%
Logs	20%
Writing Assignments	20%
Course Project	30%
Presentation	10%
Total	100%

Grade Conversion Table

Final grades will be calculated from the percentages earned in class as follows:

A	90 - 100%	4.0
B+	85 - 89%	3.5
B	80 - 84%	3.0
C+	75 - 79%	2.5
C	70 - 74%	2.0
D+	65 - 69%	1.5
D	60 - 64%	1.0
F	<60%	0.0

COURSE OUTLINE

Unit #	Activities for the unit
1	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Case Study & RFP ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 2 • Project: 1
2	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Case Study & RFP ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links

	<ul style="list-style-type: none"> • Writing Assignments: 1 • Project: 1
<p>3</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 1 • Project: 1
<p>4</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 1 • Project: 1
<p>5</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignment: 2 • Project: 1
<p>6</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignment: 2

	<ul style="list-style-type: none"> • Project: 1
<p>7</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 1 • Project: 1
<p>8</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 2 • Project: 1
<p>9</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Writing Assignments: 1 • Project: 1
<p>10</p>	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links • Project: 1

11	<ul style="list-style-type: none">• Read<ul style="list-style-type: none">○ Books 24x7, E-Brary, InfoSECURITYNetBase, periodicals, databases and Reference Resources links• Final Presentation
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INTENT/INTERFACE

The Capstone project is a key component of the ISS program and students will take the course at in the last quarter of the ISS BS degree. Students will demonstrate the Information Security knowledge and skills learned during the course.